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NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS.

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TRAINING OF AERONAUTICAL ENGINEERS.

By Edward P. Warner,
Professor of Aeronautics,
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TRAINING OF AERONAUTICAL ENGINEERS.

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The trend toward specialization which has appeared in all professions in recent years, has been especially clearly marked in the domain of engineering. Only a few decades ago there were but two recognized branches, civil and military, and now the Massachusetts Institute of Technology offers more than a dozen different engineering courses, while there are many other recognized fields to which no separate treatment is given there. Among the newest of all the engineering specialties, and one which particularly attracts the imagination of young men since the war, is that which deals with aeronautics in its several phases, and courses in aeronautical engineering have been established by a number of technical schools in the United States and abroad. The field is so new that its teaching has hardly become systematized as yet, but some measure of agreement is at least being reached on the essential elements that an aeronautical course should include, and on the requisites of preliminary preparation.

Demand Limited.

In the first place, aeronautical engineering at the present time is essentially a subject for graduate instruction. The demand for the services of aircraft designers and aeronautical scientists is necessarily much limited in the present unfortunate condition of the industry, and it is best that all the energies of the schools should be devoted to the production of a few high-

* Taken from Christian Science Monitor, September 5, 1922.

ly qualified rather than to the less thorough training of a much larger number. Also, time is saved, for the instruction in aeronautical work proper can be given more intensively, if the student has first completed a course of instruction in some one of the older and broader branches of engineering.

The best course to be used as a preparation depends somewhat on the sort of aeronautical work that the student intends to follow. If he expects to take up aeronautical research and laboratory work he should obtain his preparation through a research rather than an engineering course, and a thorough training in experimental physics is the best ground work that he can hope to obtain. Those whose interests lie in the direction of aircraft design, on the other hand, will do better to make a start with civil or mechanical engineering or naval architecture. The design of either an airplane or an airship is largely a structural problem, and the facility in the design of complex structures and the analysis of their strength which the civil engineer necessarily acquires is an invaluable possession.

The special merit of mechanical engineering as a preparation lies chiefly in the attention given to materials of construction and to the design and functioning of gasoline engines. On the whole, the mechanical course is inferior to the civil as preparation except for those students who expect to specialize on aircraft engines or who intend to devote their attention primarily to the problems of practical construction rather than to those of design. The third of the suggested preparatory courses, naval



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